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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,361	03/29/2001	Noriaki Sakamoto	10417-074001	3784
26211	7590	03/13/2006	EXAMINER	
FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			CHU, CHRIS C	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/821,361

Applicant(s)

SAKAMOTO ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4, 10 and 13 - 28 is/are pending in the application.
- 4a) Of the above claim(s) 10, 13 - 22 and 24 - 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4, 23 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 12, 2006 has been entered. An action on the RCE follows.

Response to Amendment

2. Applicant's amendment filed on January 12, 2006 has been received and entered in the case.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following limitation in claim 4 "wherein the at least one bridge is exposed within at least one of the recesses; ... wherein the rear surface of the at least one bridge is covered by an insulating film" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 4, 23 and 28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

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art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- (A) In claim 4, the specification fails to describe the limitation “wherein the at least one bridge is exposed within at least one of the recesses; ... wherein the rear surface of the at least one bridge is covered by an insulating film.” These limitations are not supported by the specification in such a way to reasonably convey to one skill in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.
- (B) Dependent claims 23 and 28 do not rectify the deficiency of claim 4 and therefore are similarly rejected.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 4, 23 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- (A) In claim 4, it is unclear what the applicant regards as “wherein the at least one bridge is exposed within at least one of the recesses; ... wherein the rear surface of the at least one bridge is covered by an insulating film.” Since the limitations are contradicting each other, hence the claim cannot be understood. For the examination purpose, examiner treats these limitations as the bridge being exposed within a recess of a molding material, but covered by an insulating film.

- (B) Dependent claims 23 and 28 do not rectify the deficiency of claim 4 and therefore are similarly rejected.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (U.S. Pat. No. 5,273,938) in view of Fjelstad (U. S. Pat. No. 6,001,671).

Regarding claim 4, Lin et al. discloses in e.g., Fig. 1 a semiconductor device comprising:

- a first (17) and a second (15) semiconductor chip which are electrically connected to each other (column 3, lines 25 – 27);
- a first die pad (19 under the element 17) to which said first semiconductor chip is fixed;
- a second die pad (19 under the element 15) to which said second semiconductor chip is fixed;
- at least one bridge (13, at the middle) electrically connecting said first and said second semiconductor chip;
- external connecting electrodes (13, located at the out-side of the elements 19 and surrounding the elements 19) provided to surround areas where said first and said

- second semiconductor chip are located, at least a portion of the rear surface of them serving as an electrode to be externally connected (see Fig. 1);
- first metallic wires (18, located at the out-side of the element 19) which electrically connect said first and said second semiconductor chip to said external connecting electrodes, respectively;
 - second metallic wires (18, at the middle) which electrically connect said first semiconductor chip, said at least one bridge and said second semiconductor chip; and
 - insulating resin (20 and 12) which seals said first and said second semiconductor chip, said external connecting electrode, and said first and said second metallic wires,
 - wherein said insulating resin (20 and 12) separates said first and second die pad, said at least one bridge and said external connecting electrodes from one another, and said second metallic wires are coupled to said first and said second semiconductor chip using a ball bond and coupled to said at least one bridge using a stitch bond.
 - further comprising a plurality of recesses (at the places of the elements 13 and 19) in a rear surface of said insulating resin (20 and 12), the rear surface of said first and second die pad and said external connecting electrodes being exposed within said recesses (see e.g., Fig. 1), wherein the at least one bridge (13, at the middle) is exposed within at least one of the recesses (see e.g., Fig. 1);
 - wherein a rear surface of the at least one bridge is recessed relative to the rear surface of the insulating resin (20 and 12);
 - wherein the rear surface of the at least one bridge is covered by an insulating film (12); and

- wherein an entire rear surface of the semiconductor device is covered by an insulating film (12).

Lin et al. does not disclose exposing or uncovering a part of the rear surface of the external connecting electrodes thru the insulating film. Fjelstad teaches in e.g., Fig. 2E exposing or uncovering a part of the rear surface of the external connecting electrodes (110'; column 5, line 31) thru a insulating film (100'; column 5, lines 28 and 29). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the openings in the insulating film of Fjelstad into the insulating film of Lin et al. as taught by Fjelstad to provide electrical connection with an external device and drawn heat away from the chip (column 5, lines 53 – 54).

Furthermore, as to the language on lines 18 ~ 20 of claim 4, “said second metallic wires are coupled to said first and said second semiconductor chip using a ball bond and coupled to said bridge using a stitch bond”, even though product-by-process claim is limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A “product by process” claim is directed to the product per se, no matter how actually made, In re Hirao, **190 USPQ 15 at 17** (footnote 3). See also In re Brown, **173 USPQ 685**; In re Luck, **177 USPQ 523**; In re Fessmann, **180 USPQ 324**; In re Avery, **186 USPQ 116**; In re Wertheim, **191 USPQ 90** (**209 USPQ 254** does not deal with this issue); and In re Marosi et al., **218 USPQ 289** final product per se which must be determined in a “product by,

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all of' claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Regarding claim 23, Lin et al. discloses in e.g., Fig. 3 said recesses being formed by a portion of the rear surface of said insulating resin (20 and 12) of which a back surface protrudes from the rear surface of said first and second die pad and said external connecting electrodes (see e.g., Fig. 1).

Regarding claim 28, Lin et al. discloses in e.g., Fig. 3 the at least one bridge (13, at the middle) being arranged between said first and second semiconductor chips.

Response to Arguments

10. Applicant's arguments with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection by different interpretation of the previously applied reference.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shin et al. discloses a semiconductor package.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

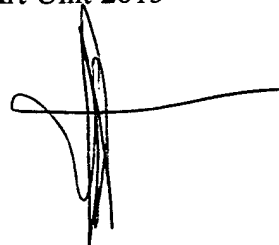
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris C. Chu
Examiner
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c.c.
Wednesday, March 01, 2006

A handwritten signature in black ink, appearing to read 'KENNETH PARKER', with a long horizontal stroke extending to the right.

KENNETH PARKER
SUPERVISORY PATENT EXAMINER